

# AUSTRALIAN ACARINA, FAMILIES ALYCIDAE AND NANORCHESTIDAE

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## Subfam. **BIMICHAELINAE** nov.

The family Alycidae Canest. 1891 (previously unknown from Australia), as hitherto understood by acarologists, includes the following twelve genera:

- Alycus* C. L. Koch 1842 (= *Pachygnathus* Dugés 1834).
- Bimichaelia* Sig Thor 1902 (= *Michaelia* Berl. 1884, preoe.).
- Nanorches* Tops. and Trt. 1890 (= *Monalichus* Berl. 1904, in part).
- Caenonychus* Ouds. 1903.
- Sebaia* Ouds. 1903 (= *Monalichus* Berl. 1904, in part).
- Sphaerolichus* Berl. 1904.
- Speleorchestes* Trägh. 1909.
- Leptalicus* Berl. 1910.
- ? *Alicorhagia* Berl. 1910.
- Hybalicus* Berl. 1913.
- Epistomalycus* Sig Thor 1931.
- Willania* Ouds. 1931.

The family name Pachygnathidae has been used by Oudemans, Vitzthum and other workers, on the opinion of the first author that Dugés' genus *Pachygnathus* (type *P. villosus* Dugés 1834) is synonymous with Koch's *Alycus* (type *A. roseus* Koch 1842). A comparison, however, of the original figures and description of Dugés and Koch, reproduced by Oudemans in his "Krit. Hist. Acarol., IIIc, 868-869," does not support this view, and it seems preferable at present to keep to Sig Thor's use of Canestrini's family name Alycidae based on Koch's genus. In the Zool. Anz., 95, 109, 1931, Sig Thor erected a third suborder, the Monoprostigmata, of the Prostigmata (in which he also placed the Stomatostigmata as a suborder) for the genera *Nanorches* and *Speleorchestes*. In the Prostigmata s. str. the peritremal tubes are paired and open in front of the mandibles, and in the Stomatostigmata the opening is medial and behind the mandibles, whereas in the Monoprostigmata the stigmal tube is unpaired, somewhat hook-like, with a small median sac, and opens amidst the mouth parts and in close association with the mandibles.

Sig Thor, however, did not follow this up by making the necessary new family for these genera, and the name Nanorchestidae is herewith proposed.

A close study of the other genera hitherto placed in the Alycidae reveals further important differences in the various genera which suggest that it is in reality a rather heterogeneous assemblage.

The genus *Bimichaelia*, with very long slender mandibles with short simple, almost styliform chelicerae, and without dorsal setae, must be separated from the rest, which all have short robust mandibles with stout, sometimes dentate chelicerae, and with two dorsal setae. For this genus, a new subfamily, Bimichaelinae is proposed.

The genera *Nanorches*, *Speleorchestes*, *Epistomalycus*, *Sebaia*, *Caenonychus* and *Willania* all have the tarsal claws wanting, a claw-like empodium, a more or less triangular well developed epistome overlapping the base of the mandibles, besides a more or less quadrate propodosomal shield. As yet, however, only in the first two named genera has the structure of the stigmal organ

been defined. Nevertheless, on the other above mentioned characters the other four genera are more nearly related to *Nanorchestes* and *Speleorchestes* than to *Bimichaelia* or the *Alycus* group of genera. In *Nanorchestes* and *Speleorchestes* the epistome is longitudinally bilobed, freely jointed to the anterior margin of the propodosoma, and without any setae. In the latter genus Trägårdh shows the two lobes of the epistome united to their respective mandibles. Whether this is due to pressure in mounting, or is a further development from the form seen in *Nanorchestes* cannot be decided, but if these two lobes adjoined they would certainly resemble closely that found in the latter genus.

The genus *Caenonychus* Ouds. has been rather inadequately described and has been variously placed in the Eupodidae by Oudemans, the Tydeidae by Vitzthum and the Alycidae by Sig Thor. From the details available it would seem to be better placed in the new family Nanorchestidae and might possibly be synonymous with Trägårdh's *Speleorchestes*, in which case *Caenonychus* would have priority.

While in *Nanorchestes* and *Speleorchestes* the epistome is distinctly marked off from the anterior margin of the propodosoma, in *Epistomalycus* and *Willania*, it is not only fused with the propodosoma but arises some distance behind the anterior margin, and in both genera near the apex is furnished with a pair of ciliated setae (or "vertical hairs" of Oudemans). *Willania* was described without any figure, but there does not appear to be any reason why it should be separated from Sig Thor's genus *Epistomalycus* which was described in March 1931, two months before Oudemans' description was published.

The genus *Sebaia* was erected by Oudemans for Berlese's *Alicus* (*Monalichus*) *siculus* on the basis of its clavate posterior sensillae and has been quoted as a synonym of *Monalichus*. Berlese, however, although placing *siculus* in *Monalichus*, definitely stated that *M. arboriger*, now *Nanorchestes arboriger*, was the type. *Sebaia*, then, is a synonym only in part of *Monalichus*.

In the present paper the old family Alycidae is divided into the Alycidae s. str. and Nanorchestidae fam., nov., as follows:

Large to small mites, of subquadrate, globose, spherical or elongate form, with an evenly rounded epistome, and tarsi furnished with paired claws and a ciliated more or less pad-like or claw-like empodium. Propodosoma often with a crista and rounded lens-like pseudo-capitulum, and with usually two pairs of sensillae.

Fam. Alycidae Canest. s. str.

Very small mites, usually saltatorial. Propodosoma with a more or less quadrate shield and with a prominent triangular epistome. With (? always) an unpaired somewhat sickle-shaped peritremal tube opening orally and in close association with the mandibles. Claws absent, empodium present and claw-like.

Fam. Nanorchestidae nov.

#### Fam. ALYCIDAE Canest. 1891 s. str.

In this family should be included the genera *Bimichaelia*, *Alycus*, *Sphaerolichus*, *Hybolicus*, *Leptalicus* and *Paralycus* g. nov. Of these *Bimichaelia* can be separated from all the rest on the very different form of the mandibles, etc., and is here placed in a new subfamily, Bimichaelinae, the remaining genera forming the Alycinae.

The following key will separate the genera:

- 1 Mandibles very long and slender with short non-dentate, almost styliform chelicerae; without dorsal setae. Propodosoma with a broad, more or less distinct crista ending anteriorly in a lens-like pseudocapitulum; with two pairs of sensillae of which the posterior are globose, the anterior filamentous. Eyes absent. Body form subquadrate. Claws 2; empodium ciliated, not claw-like.

Subfam. Bimichaelinae nov.

Gen. *Bimichaelia* Sig Thor 1902  
(= *Michaelia* Berl. 1884 preoc.)

Type—*M. angustana* Berl. 1884, A. M. S., fasc. 6, Italy; also *M. setigera* Berl. 1904. Redia II. Acari nuovi, Manip. III, Italy; *M. subnuda* Berl. 1905. Redia II. Mat. pel. Manip. V, Italy; *M. grandis* Berl. 1913. Redia IX. Acari nuovi. Manip. VII-VIII, Java; and the following new species, *B. australica* n. sp., *B. stellaris* n. sp., and *B. pusilla* n. sp., from Australia, *B. nova-zealandica* n. sp., from New Zealand.

Mandibles short and robust with short slender chelicerae. Propodosoma without crista, with or without pseudocapitulum, with one or two pairs of sensillae of which the posterior may be globose, clavate or filamentous. Shape subquadrate, elongate-oval or globose. Subfam. Alycinae nov. 2

- 2 Body shape subquadrate. Propodosoma with both pairs of sensillae filamentous, without crista or pseudocapitulum. Hysterosoma with impressed transverse lines. Eyes present. Two claws with claw-like ciliated empodium. Gen. *Alycus* Koch 1842

Type—*Alycus roseus* Koch 1842. C. M. A. (= ? *Pachygnathus villosus* Dugés 1834), Europe; also *Alycus occidentalis* n. sp., Australia.

Body globose or spherical, with or without pseudocapitulum and without crista. One or two pairs of filamentous sensillae. 3

Body elongate-oval. Posterior sensillae clavate or filamentous. Without pseudocapitulum. 4

- 3 Body spherical. Eyes I + 1 (? 2 + 2). Propodosoma triangular, indistinctly separated from hysterosoma, anteriorly with a large lens-like pseudocapitulum. Both pairs of sensillae filamentous. Anterior tibiae and tarsi dilated and spinous. Coxae in two closely adjacent groups. Gen. *Sphaerolichus* Berl. 1904

Type—*S. armipes* Berl. 1904. Redia II. Acari nuovi, Manip. III, Italy. (Berlese says only one eye on each side but his figure suggests two on each side.)

Body globose but not spherical. Propodosoma without pseudocapitulum, with only one (?) pair of sensillae, these basal. Eyes present or absent.

Gen. *Hybolicus* Berl. 1913

Type—*Alicus ornatus* Berl. 1904. Redia II. Acari nuovi. Manip. III, Java; also *H. flabelliger* Berl. 1913. Redia IX. Manip. VII-VIII, Java; and *H. gibbosus* n. sp. from Australia.

- 4 Both pairs of sensillae filamentous. Eyes absent. Gen. *Leptalicus* Berl. 1910  
Type—*A. (L.) paoli* Berl. 1910. Redia VI. Acari nuovi. Manip. V, Italy; also *A. elongatus* Berl. 1904. Redia II. Acari nuovi. Manip. III, Italy.

Posterior sensillae clavate. Eyes absent.

Gen. *Paralycus* nov.

For *Alicus pyrigerus* Berl. 1905. Redia II. Mat. pel. Manip. V, Italy.

#### Subfam. **BIMICHAELINAE** nov.

Gen. **BIMICHAELIA** Sig Thor 1902

**Bimichaelia australica** n. sp.

Fig. 1, A-H

*Description*—Shape quadrate. Colour in life white. Length to 900  $\mu$ , width to 560  $\mu$ . Suture between propodosoma and hysterosoma, and several impressed transverse lines on hysterosoma which disappear when mounted. Propodosoma roughly triangular with a broad median crista ending anteriorly in a lens-like pseudocapitulum (cf. fig. 1, A, H); with two pairs of sensillae, posterior globose and 21  $\mu$  long, 104  $\mu$  apart, anterior filamentous, 50  $\mu$  long and apparently simple, 65  $\mu$  apart. Eyes absent. Mandibles long and slender, 230  $\mu$ , with styloform chelicerae and no dorsal setae. Palpi 5-segmented, apical segment with a stout terminal rod flanked on each side by a pointed seta. Legs relatively short, I 540  $\mu$ , II 475  $\mu$ , III 375  $\mu$ , IV 425  $\mu$ ; tarsi I three times as long as wide; segments IV-VI of legs I and II with sensory rod-like setae as in fig. 1, E; tarsi with paired claws and a short median ciliated empodium. Dorsal cuticle with a reticulate pattern as in fig. 1, A, H, and with short ciliated setae 15  $\mu$  long. Coxae in two groups, somewhat widely separated. Ventral setae as on the dorsum.

*Locality*—Type and paratypes from moss from Waterfall Gully, South Australia, 15 April 1933 (R. V. S.); from moss from Long Gully, National Park,

South Australia, August 1938, three specimens (H. W.); English Jungle, Malanda, Queensland, May 1935 (Parkhouse), one specimen; Mount Wellington, Tasmania, May 1935, December 1937 (J. W. E.), July 1943 (V. V. H.).

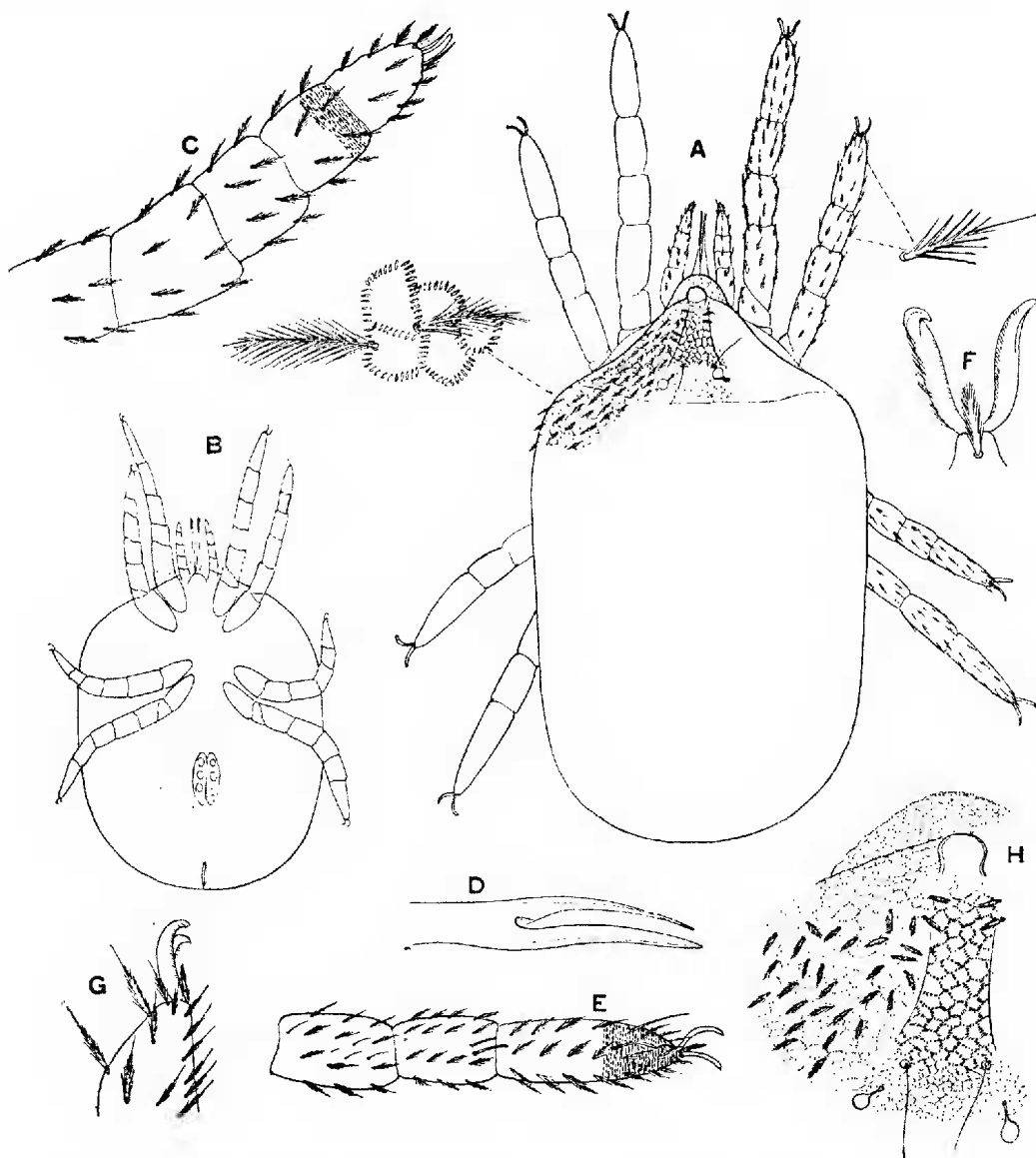


Fig. 1, A-H—*Bimichaelia australica* n. sp.: A, dorsal view showing crista, sensillae, pseudocapitulum and reticulation of cuticle, also dorsal and leg setae more enlarged; B, venter showing position of coxae; C, palp; D, chelicerae of mandibles; E, last three segments of leg I; F, claws and empodium from below; G, same from side; H, left half of propodosoma more enlarged.

*Bimichaelia nova-zealandica* n. sp.

Fig. 2, A-C

*Description*—Shape subquadrate. Colour (in spirit), white. Length 2,000  $\mu$ , width 1,360  $\mu$ . Suture between propodosoma and hysterosoma; no suture lines on hysterosoma when mounted. Propodosoma roughly triangular with broad median crista and an anterior lens-like pseudocapitulum; with two pairs of sensillae,

posterior globose,  $21\ \mu$  long,  $140\ \mu$  apart, anterior filamentous  $78\ \mu$  long, apparently simple,  $85\ \mu$  apart. Eyes absent. Mandibles long and slender,  $610\ \mu$ , with almost styliform chelicerae and no dorsal setae. Palpi 5-segmented, apical segment with stout terminal rod flanked on each side by a pointed seta. Legs 6-segmented, relatively short, I  $1,275\ \mu$ , II  $1,190\ \mu$ , III  $1,100\ \mu$ , IV  $1,360\ \mu$ ; tarsus I three times as long as wide; no sensory rod-like setae observed on segments IV-VI of legs I and II; ciliated setae on tarsi with a longer apical point than in preceding species;

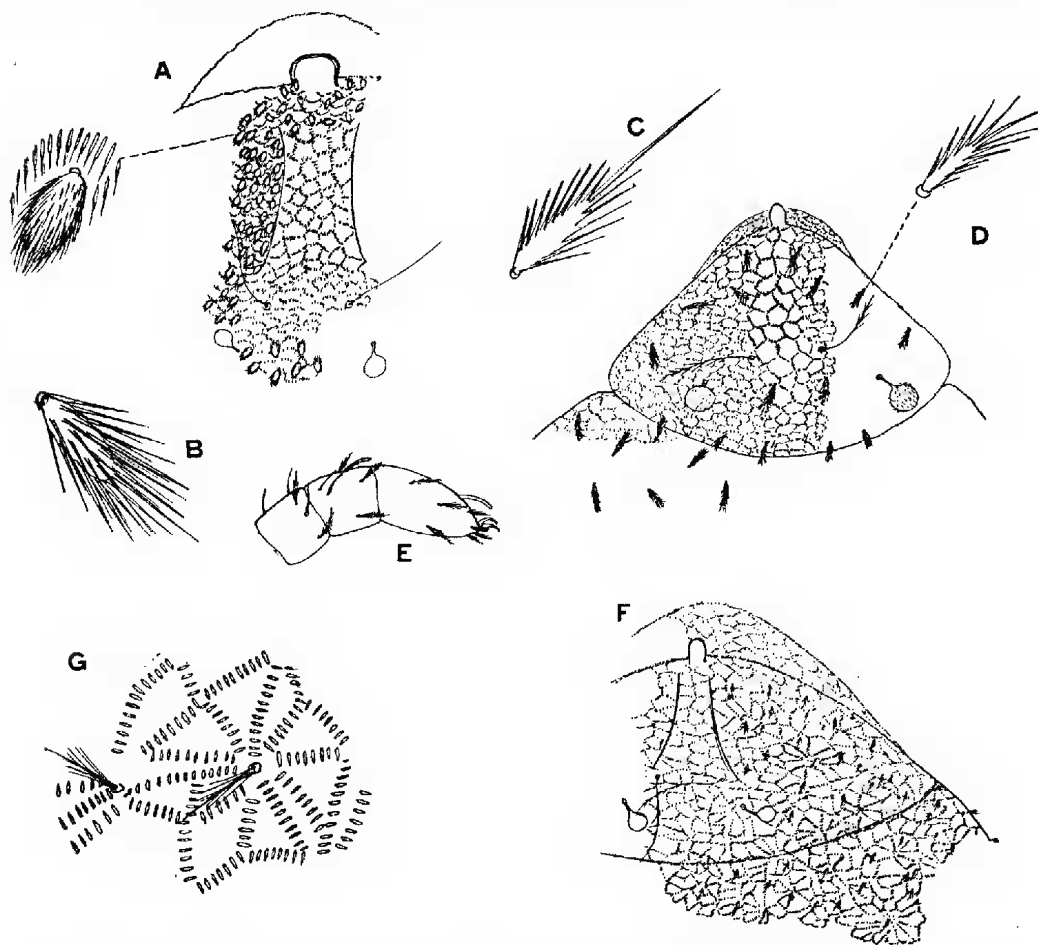


Fig. 2, A-C—*Bimichaelia nova-zealandica* n. sp.: A, crista, sensillae, pseudocapitulum and epistome with dorsal seta enlarged; B, ventral seta; C, leg seta. D-E—*Bimichaelia pusilla* n. sp.: D, propodosoma; E, last three segments of leg I. F-G—*Bimichaelia stellaris* n. sp.: F, right half of propodosoma; G, dorsal reticulations highly enlarged.

tarsi with paired claws and a short inconspicuous ciliated empodium. Dorsal cuticle reticulately patterned as in fig. 2 A, with short,  $10\ \mu$ , oval setae with long ciliations. Coxae in two groups, somewhat widely separated. Ventral setae similar to dorsal but with longer ciliations.

*Locality*—One specimen from Davies Bush, Manurewa, New Zealand, 14 July 1933 (E. D. P.).

***Bimichaelia pusilla* n. sp.**

Fig. 2, D-E

*Description*—Shape quadrate. Colour in life white. Length to  $255\ \mu$ , width to  $185\ \mu$ . Suture between propodosoma and hysterosoma; impressed transverse lines on hysterosoma distinct even when mounted. Propodosoma roughly

triangular; crista present but not well defined, only shown by the somewhat longer and stronger reticulations, and ending in a pseudocapitulum smaller than in preceding species and longer than wide; with two pairs of sensillae, posterior globose and ciliated,  $16\ \mu$  long, anterior filamentous,  $27\ \mu$  long with several lateral branchlets; bases of posterior sensillae  $56\ \mu$  apart, anterior sensillae  $24\ \mu$  apart. Eyes absent. Mandibles long and slender,  $88\ \mu$  with almost styliform chelicerae and no dorsal setae. Palpi 5-segmented, last segment with apical rod flanked by two pointed setae as in preceding species. Legs 6-segmented, short, I  $152\ \mu$ , II  $145\ \mu$ , III  $112\ \mu$ , IV  $135\ \mu$ ; tarsus I short, only twice as long as wide; tarsi I and II with rod-like sensory setae as in *B. australica*; claws two, with a median ciliated empodium. Dorsal cuticle reticulately patterned as in fig. 2 D, with short ciliated setae,  $8\ \mu$  long. Coxae in two groups, but not as widely separated as in other species. Ventral setae as on the dorsum.

*Locality*—Type and two paratypes from moss from Normanville, South Australia, September 1943 (H. M. Cooper); two specimens from moss from Sassafras, Victoria, December 1931 (H. G. A.).

***Bimichaelia stellaris* n. sp.**

Fig. 1, F-G

*Description*—Shape subquadrate. Colour in life white. Length  $550\ \mu$ , width  $190\ \mu$ . Suture between propodosoma and impressed transverse lines on hysterosoma weak. Propodosoma rather triangular with a crista, a small hardly lens-like pseudocapitulum longer than wide, and with the usual two pairs of sensillae, the posterior globose, smooth,  $15\ \mu$  long with bases  $65\ \mu$  apart, anterior filamentous and ciliated,  $47\ \mu$  long and bases  $36\ \mu$  apart. Mandibles long and slender,  $170\ \mu$  with almost styliform chelicerae, and without setae. Palpi 5-segmented, last segment with a terminal rod clavate at tip and not parallel-sided, flanked on each side with a pointed seta. Legs short, I  $270\ \mu$ , II  $240\ \mu$ , III  $204\ \mu$ , IV  $235\ \mu$ ; tarsi I three times as long as wide; segments IV-VI of legs I and II with usual sensory rods; tarsi with paired claws and ciliated more or less pad-like empodium. Dorsal cuticle with reticulate pattern as figured, differing from other species in the pattern becoming stellate on hysterosoma, with short,  $5\ \mu$ , ciliated setae. Coxae in two groups. Ventral setae as on dorsum.

*Locality*—One specimen in moss from Mount Arden, 12 miles north of Quorn, South Australia, November 1943 (H. M. C.).

Subfam. **ALYCINAE** nov.

Gen. **ALYCUS** Koch 1842

***Alycus occidentalis* n. sp.**

Fig. 3, A-E

*Description*—Shape subquadrate with the hysterosoma rather higher than the propodosoma. Colour in life white. Length to  $350\ \mu$ , width to  $208\ \mu$ . Before mounting with impressed transverse lines on hysterosoma. A suture between propodosoma and hysterosoma. Propodosoma roughly triangular, without crista or pseudocapitulum; with two pairs of strongly ciliated filamentous sensillae, each  $48\ \mu$  long, bases of posterior  $52\ \mu$  apart, of anterior  $29\ \mu$  apart. Eyes, one on each side. Mandibles short and robust,  $56\ \mu$  long, with two setae, one sub-basal and about  $22\ \mu$  long, the other only  $8\ \mu$  long and near base of fixed finger of chelicerae, chelicerae somewhat slender but not styliform and without teeth, movable finger  $15\ \mu$  long. Palpi 5-segmented, rather short and stout, last segment without apical rod or claw but with a sub-basal stout curved rod-like seta (cf. fig. 3, C). Legs short, I  $136\ \mu$ , II  $100\ \mu$ , III  $120\ \mu$ , IV  $150\ \mu$ ; segments IV-VI of legs I and II with sensory rod-like setae as in fig. 3, D; tarsi with paired claws and ciliated claw-like empodium; tarsi I twice as long as wide. Dorsum with numerous short,

16  $\mu$ , ciliated setae arising from circularly striated areas (cf. fig. 3, A). Coxae in two groups, narrowly separated; coxae IV widely separated from each other. Ventral setae similar to dorsal.

*Locality*—Many specimens in moss from Glen Osmond, South Australia, July 1934 (R. V. S.).

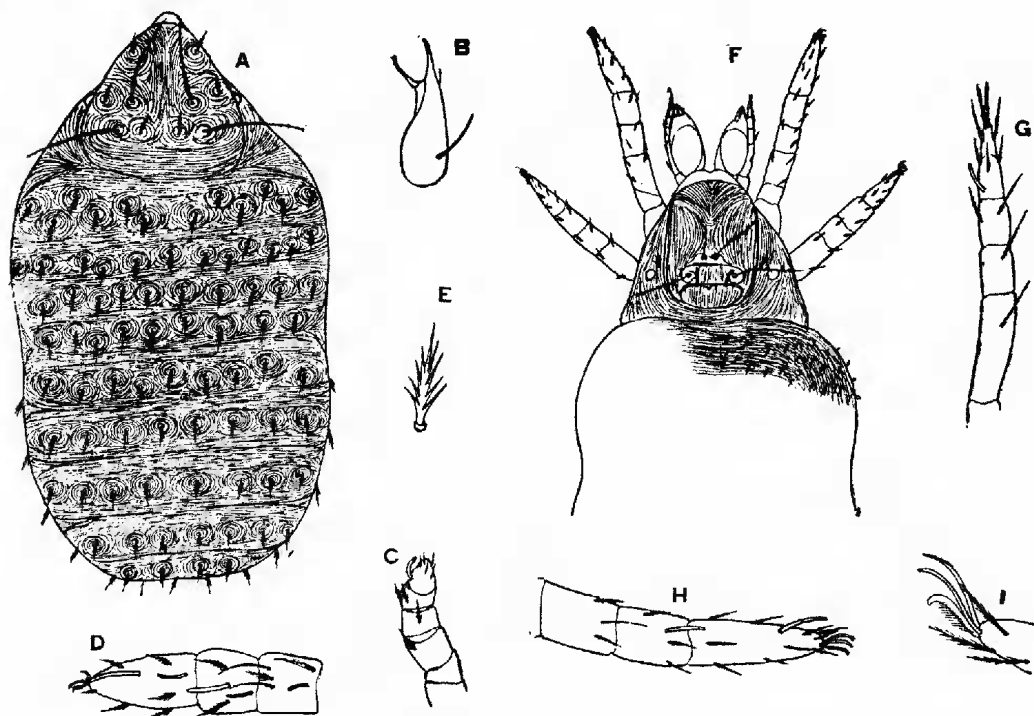


Fig. 3. A-E—*Alycus occidentalis* n. sp.—A, dorsal view; B, mandible; C, palp; D, last three segments of leg I; E, dorsal seta. F-I—*Alycus* ? *roseus* Koch: F, propodosoma; G, palp; H, leg I, last three segments; I, claws and empodium.

#### ALYCUS ? ROSEUS Koch 1842

Fig. 3, F-I

*Description*—Shape subquadrate, propodosoma roughly triangular but with a rectangular shield, hysterosoma subquadrate, rather longer than wide with a slight constriction at one-third. Colour in life a light rosy pink. Length 400  $\mu$ , width 183  $\mu$ . Propodosoma with two pairs of long ciliated sensillae, posterior 52  $\mu$  long and bases 28  $\mu$  apart, anterior 40  $\mu$  long and close together, the bases not more than 5  $\mu$  apart. Eyes, one on each side, black pigmented, on outside of shield, and with the usual ocular shield. Mandibles robust, 45  $\mu$  long, probably with two setae but only a very short one near base of chelicerae visible; chelicerae small. Palpi 5-segmented, relatively longer and more slender than in *occidentalis*, last segment without apical rod but with a curved sub-basal rod. Legs short, I 182  $\mu$ , II 130  $\mu$ , III 122  $\mu$ , IV 138  $\mu$ , tarsi I with sensory rods as figured on segments IV-VI; tarsi I about three times as long as wide, tarsi with two claws and a ciliated claw-like empodium. Dorsal cuticle striated, with small ciliated setae arising from indistinct circularly striated areas, but these areas very much smaller than in *occidentalis*; dorsal setae mostly only 3  $\mu$  long but lengthening posteriorly and last three rows reaching to 10  $\mu$  in length.

*Locality*—Two specimens in moss from Mount Arden, twelve miles north of Quorn, November 1943 (H. M. C.).

*Remarks*—This is somewhat doubtfully referred to Koch's European species, but good figures and descriptions have not been published and comparison with authentic material must be awaited.

#### Genus HYBALICUS Berlese 1913

Aeari nuovi, Manipulus VII-VIII, Redia, 9, 78, 1913. Genotype *Alicus ornatus* Berl. 1904, *ibid.*, Manipulus III, Redia, 2, 13; also *H. flabelliger* Berl. 1913, *ibid.*

Berlese says, "With the characters of the genus *Alicus* Koch (Berlese) but with globose abdomen. Size small."

As far as one can judge from Berlese's description and figures and from a study of the following new species, the genus may provisionally be more fully diagnosed as follows:

Small mites of globose form. Propodosoma subtriangular and narrower than hysterosoma with only one posterior pair of ciliated filamentous sensillae present (Berlese shows a second anterior pair in *ornatus* but not in *flabelliger*). Mandibles short and robust with two dorsal setae, the posterior and longer being near base of chelicerae; chelicerae short, stout and dentate. Palpi 5-segmented, last segment with a terminal long apically knobbed rod. Claws two, long and slender, with long ciliated empodium. Coxae in two groups, widely separated, coxae IV very large and elongated and touching medially.

#### *Hybalicus gibbosus* n. sp.

Fig. 4, A-G

*Description*—Shape globose with hysterosoma much higher than propodosoma. Colour in life white. Length to 310  $\mu$ , width to 200  $\mu$ . Suture between propodosoma and hysterosoma. Anterior portion of propodosoma forming a shield, posterior margin of which runs just behind sensillae bases; with two pairs of stout curved ciliated setae and a pair of long, 104  $\mu$ , ciliated sensillae; in front of the propodosoma is a semicircular lens-like epistome carrying two short bent ciliated setae; behind the shield the propodosoma carries a pair of submedian strong curved ciliated setae, and outside of these a pair of shorter similar setae. Eyes, one on each side, difficult to see, for they are quite lateral and in front of a thickened portion of the lateral margin of the propodosoma, which apparently represents the oval organ behind the eyes of *Nanorchestes*. Mandibles bulbous, longitudinally finely striated, chelate, with two dorsal setae, a short fine one at base of chelicerae and a longer stronger and ciliated one more posterior. Maxillae as in fig. 4, E. Palpi 5-segmented, apical segment with a terminal, apically knobbed rod and a strong pointed subapical seta, all other setae ciliated. Dorsal cuticle verrucose and finely striated. Dorsal setae strongly curved, ciliated, 30  $\mu$  long and arranged 4.4.4.4.8.8.8. Legs long and slender, I 182  $\mu$  (including coxae), II 135  $\mu$ , III 150  $\mu$ , IV 235  $\mu$ ; tarsi with paired slender claws and median ciliated empodium. Coxae in two groups, I, II and III small and separated, IV large elongate and meeting in mid-line, the posterior margin being very much thickened and strengthened. Venter: three pairs of small setae on gnathosoma; behind gnathosoma a pair of longer setae and a similar pair between coxae I, coxae I and III with two setae, II with one, and IV with six setae; at junction of coxae IV is a pair of very small setae; on each side of genital opening a pair of setae and posterior thereto 18 setae arranged 2.4.4.4.4, 16  $\mu$  long. Genitalia with three pairs of acetabula, and fringed with setae.

*Locality*—Many specimens from moss from Black Swamp, near Currency Creek, South Australia, October 1943 (H. M. C.).



*Remarks*—In its globose form this species fits into the genus *Hybolicus*, as briefly defined by Berlese (*loc. cit.*). It differs from both the genotype (*ornatus*) and *flabelliger* in the nature of the dorsal setae. In *ornatus* from Java the dorsal setae are more numerous, shorter and almost straight with fewer ciliations, and the cuticle is more densely furnished with oval verrucae. In *flabelliger* from Italy the dorsal setae are short and flabellate. In neither of his species has Berlese observed the presence of eyes.

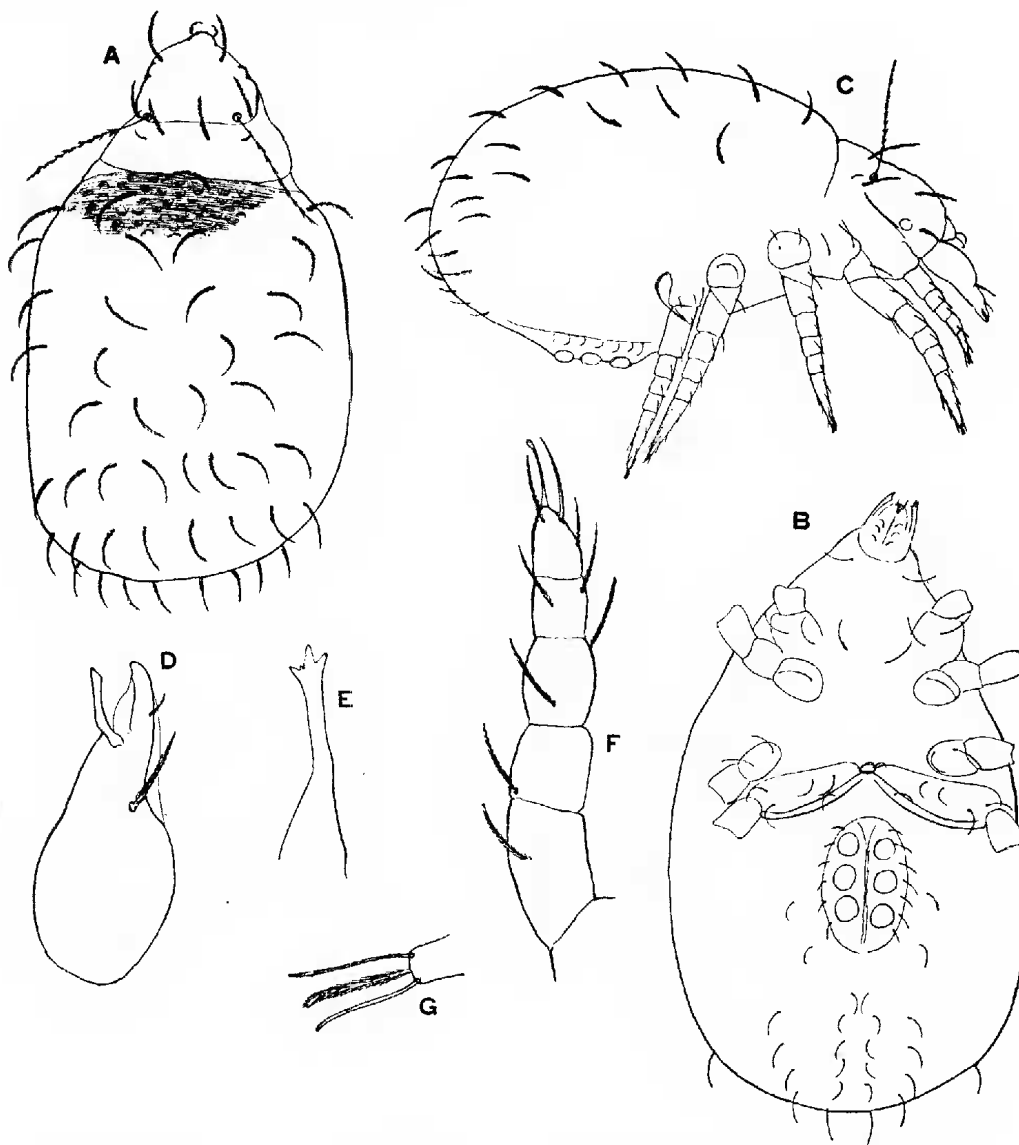


Fig. 4, A-G—*Hybolicus gibbosus* n. sp.: A, dorsal view; B, ventral view; C, lateral view; D, mandible; E, maxilla; F, palp; G, claws and empodium.

Fam. **NANORCHESTIDAE** nov.

As defined earlier in this paper in its separation from Alycidae s. str. The genera included are *Epistomalycus*, *Willania*, *Sebaia*, *Nanorchestes*, *Speleorchestes* and *Caenonychus*. Of these it seems probable that *Willania* Oudemans, May 1931, is the same as *Epistomalycus* Sig Thor, March 1931, and that *Caenonychus*

Ouds. may be synonymous with *Speleorchestes* Trägårdh. The genera may be keyed as follows:

- 1 Epistome fused with propodosoma and arising behind the anterior margin, not bilobed, and furnished anteriorly with paired ciliated setae. Coxae all touching, not in two groups. Only one pair of sensillae, filamentous. Eyes absent.

Gen. *Epistomalyx* Sig Thor 1931 (March)  
(= ? *Willania* Ouds. 1931, May)

Type—*E. clavipilis* Sig Thor 1931, Norway; *E. plumipilis* Sig Thor 1931, Norway;  
and *W. miro* Ouds. 1931, Holland.

Epistome bilobed, striated, without setae and separated from anterior margin of propodosoma by a suture.

- 2 Sensillae in two pairs, both filamentous and ciliated.

Sensillae in two pairs, posterior clavate, anterior filamentous. Eyes absent.

Gen. *Schaia* Ouds. 1903

Type—*Monalixus siculus* Berl. 1910

- 3 Body short and wide, propodosoma somewhat sunk within hysterosoma. Both sensillae placed behind midline of propodosomal shield and close together. Eyes present.

Gen. *Nanorchestes* Tops. and Trt. 1890

Type—*N. amphibius* Tops. and Trt. 1890, France; *N. arboriger* Berl. 1904, Europe and Australia; *N. collinus* Hirst 1918, England and Australia.

Body more elongate, propodosoma not sunk within hysterosoma. Anterior sensillae near anterior margin of propodosomal shield and well separated from posterior sensillae. Eyes present.

Gen. *Speleorchestes* Trägårdh  
(= ? *Caenonychus* Ouds. 1903)

Type—*S. formicorum* Träggh. 1910, Sweden.

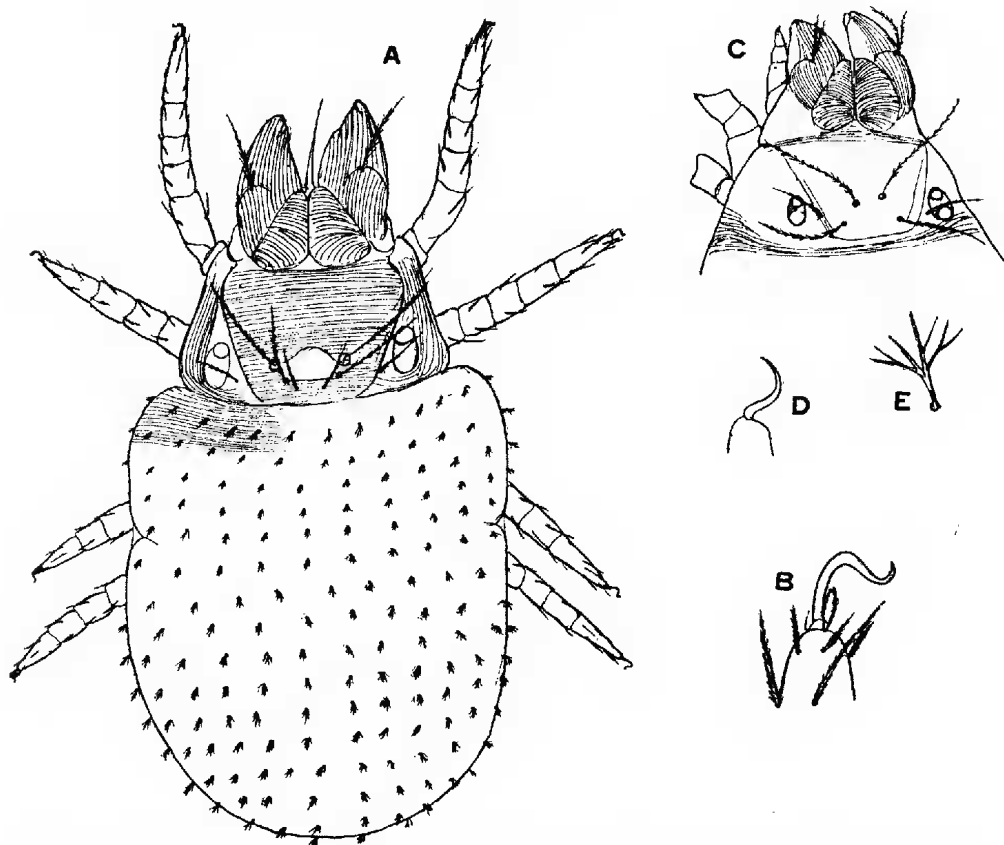


Fig. 5. A-B—*Nanorchestes arboriger* Berl.: A, dorsal; B, empodium. C-E—*N. collinus* Hirst: C, dorsal view of propodosoma; D, empodium; E, dorsal seta.

## Genus NANORCHESTES Tops. and Trt. 1890

## NANORCHESTES ARBORIGER (Berlese 1904)

*Alichus arboriger* Berl. 1904. Redia II, Acari nuovi, Manip. II, Italy, Norway.

Fig. 5, A-B

Very small saltatorial mites of a dirty white to dark greenish colour with traces of red about gnathosoma and legs. Length (excluding mandibles) 160-170  $\mu$ , width 120-130  $\mu$ . Eyes, one on each side, with the usual larger ocular lobe (? eye) behind. Anterior sensillae 37  $\mu$  long and 20  $\mu$  apart, posterior 28  $\mu$  long. Mandibles stout and robust, 40  $\mu$  long, with indefinable chelicerae, and only a single dorsal ciliated seta 28  $\mu$  long. Dorsal setae numerous, tri- to quinquetrous. Empodium claw-like and doubly bent (cf. fig. 5, B).

*Locality*—In moss from Normanville, South Australia, September 1943 (H. M. Cooper), and Black Swamp, near Currency Creek, South Australia, October 1943 (H. M. C.).

## NANORCHESTES COLLINUS Hirst 1918

Annals and Mag. Nat. Hist., 1918, (9), 2, 213.

Fig. 5, C-E

Very small mites similar in colour to preceding. Length (without mandibles) 273  $\mu$ , width 170  $\mu$ . Eyes, one on each side, with the usual posterior oval lobe. Anterior sensillary setae 70  $\mu$  long and 13  $\mu$  apart, posterior 52  $\mu$  long. Mandibles robust, 65  $\mu$  long with a dorsal seta divided into two unequal, 26  $\mu$  and 21  $\mu$ , branches from its base. Dorsal setae as figured, 8  $\mu$  long. Empodium claw-like but not doubly bent.

*Locality*—This species was hitherto known only from a single specimen from the Mendip Hills, Somerset, England. It was not un plentiful in moss from Black Swamp, near Currency Creek, South Australia, October 1943 (H. M. C.).